

SEQUENCE LISTING

<110> Rudiger Ridder, et.al.
 <120> Method for solution based diagnosis
 <130> 05033.0003.00us00
 <140> 10/633,484
 <141> 2003-07-31
 <150> EP 02017313.4
 <151> 2002-08-01
 <160> 8
 <170> PatentIn version 3.3
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 <213> Homo sapiens
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 <222> (1)..(745)
 <223> gamma-Catenin, Swissprot Accession Q86W21
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Met Glu Val Met Asn Leu Met Glu Gln Pro Ile Lys Val Thr Glu Trp
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Gln Gln Thr Tyr Thr Tyr Asp Ser Gly Ile His Ser Gly Ala Asn Thr
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Cys Val Pro Ser Val Ser Ser Lys Gly Ile Met Glu Glu Asp Glu Ala
 35 40 45

Cys Gly Arg Gln Tyr Thr Leu Lys Lys Thr Thr Thr Tyr Thr Gln Gly
 50 55 60

Val Pro Pro Ser Gln Gly Asp Leu Glu Tyr Gln Met Ser Thr Thr Ala
 65 70 75 80

Arg Ala Lys Arg Val Arg Glu Ala Met Cys Ser Gly Val Ser Gly Glu
 85 90 95

Asp Ser Ser Leu Leu Leu Ala Thr Gln Val Glu Gly Gln Ala Thr Asn
 100 105 110

Leu Gln Arg Leu Ala Glu Pro Ser Gln Leu Leu Lys Ser Ala Ile Val
 115 120 125

His Leu Ile Asn Tyr Gln Asp Asp Ala Glu Leu Ala Thr Arg Ala Leu
 Page 1

130

135

140

Pro Glu Leu Thr Lys Leu Leu Asn Asp Glu Asp Pro Val Val Val Thr
145 150 155 160

Lys Ala Ala Met Ile Val Asn Gln Leu Ser Lys Lys Glu Ala Ser Arg
165 170 175

Arg Ala Leu Met Gly Ser Pro Gln Leu Val Ala Ala Val Val Arg Thr
180 185 190

Met Gln Asn Thr Ser Asp Leu Asp Thr Ala Arg Cys Thr Thr Ser Ile
195 200 205

Leu His Asn Leu Ser His His Arg Glu Gly Leu Leu Ala Ile Phe Lys
210 215 220

Ser Gly Gly Ile Pro Ala Leu Val Arg Met Leu Ser Ser Pro Val Glu
225 230 235 240

Ser Val Leu Phe Tyr Ala Ile Thr Thr Leu His Asn Leu Leu Leu Tyr
245 250 255

Gln Glu Gly Ala Lys Met Ala Val Arg Leu Ala Asp Gly Leu Gln Lys
260 265 270

Met Val Pro Leu Leu Asn Lys Asn Asn Pro Lys Phe Leu Ala Ile Thr
275 280 285

Thr Asp Cys Leu Gln Leu Leu Ala Tyr Gly Asn Gln Glu Ser Lys Leu
290 295 300

Ile Ile Leu Ala Asn Gly Gly Pro Gln Ala Leu Val Gln Ile Met Arg
305 310 315 320

Asn Tyr Ser Tyr Glu Lys Leu Leu Trp Thr Thr Ser Arg Val Leu Lys
325 330 335

Val Leu Ser Val Cys Pro Ser Asn Lys Pro Ala Ile Val Glu Ala Gly
340 345 350

Gly Met Gln Ala Leu Gly Lys His Leu Thr Ser Asn Ser Pro Arg Leu
355 360 365

Val Gln Asn Cys Leu Trp Thr Leu Arg Asn Leu Ser Asp Val Ala Thr
370 375 380

Lys Gln Glu Gly Leu Glu Ser Val Leu Lys Ile Leu Val Asn Gln Leu
Page 2

385 390 395 400

Ser Val Asp Asp Val Asn Val Leu Thr Cys Ala Thr Gly Thr Leu Ser
405 410 415

Asn Leu Thr Cys Asn Asn Ser Lys Asn Lys Thr Leu Val Thr Gln Asn
420 425 430

Ser Gly Val Glu Ala Leu Ile His Ala Ile Leu Arg Ala Gly Asp Lys
435 440 445

Asp Asp Ile Thr Glu Pro Ala Val Cys Ala Leu Arg His Leu Thr Ser
450 455 460

Arg His Pro Glu Ala Glu Met Ala Gln Asn Ser Val Arg Leu Asn Tyr
465 470 475 480

Gly Ile Pro Ala Ile Val Lys Leu Leu Asn Gln Pro Asn Gln Trp Pro
485 490 495

Leu Val Lys Ala Thr Ile Gly Leu Ile Arg Asn Leu Ala Leu Cys Pro
500 505 510

Ala Asn His Ala Pro Leu Gln Glu Ala Ala Val Ile Pro Arg Leu Val
515 520 525

Gln Leu Leu Val Lys Ala His Gln Asp Ala Gln Arg His Val Ala Ala
530 535 540

Gly Thr Gln Gln Pro Tyr Thr Asp Gly Val Arg Met Glu Glu Ile Val
545 550 555 560

Glu Gly Cys Thr Gly Ala Leu His Ile Leu Ala Arg Asp Pro Met Asn
565 570 575

Arg Met Glu Ile Phe Arg Leu Asn Thr Ile Pro Leu Phe Val Gln Leu
580 585 590

Leu Tyr Ser Ser Val Glu Asn Ile Gln Arg Val Ala Ala Gly Val Leu
595 600 605

Cys Glu Leu Ala Gln Asp Lys Glu Ala Ala Asp Ala Ile Asp Ala Glu
610 615 620

Gly Ala Ser Ala Pro Leu Met Glu Leu Leu His Ser Arg Asn Glu Gly
625 630 635 640

Thr Ala Thr Tyr Ala Ala Ala Val Leu Phe Arg Ile Ser Glu Asp Lys
Page 3

645 650 655
 Asn Pro Asp Tyr Arg Lys Arg Val Ser Val Glu Leu Thr Asn Ser Leu
 660 665 670
 Phe Lys His Asp Pro Ala Ala Trp Glu Ala Ala Gln Ser Met Ile Pro
 675 680 685
 Ile Asn Glu Pro Tyr Gly Asp Asp Leu Asp Ala Thr Tyr Arg Pro Met
 690 695 700
 Tyr Ser Ser Asp Val Pro Leu Asp Pro Leu Glu Met His Met Asp Met
 705 710 715 720
 Asp Gly Asp Tyr Pro Ile Asp Thr Tyr Ser Asp Gly Leu Arg Pro Pro
 725 730 735
 Tyr Pro Thr Ala Asp His Met Leu Ala
 740 745

<210> 2
 <211> 314
 <212> PRT
 <213> Homo sapiens

<220>
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 <222> (1)..(314)
 <223> Ep-Cam, Swissprot Accession P16422

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 Thr Ala Thr Phe Ala Ala Ala Gln Glu Glu Cys Val Cys Glu Asn Tyr
 20 25 30
 Lys Leu Ala Val Asn Cys Phe Val Asn Asn Asn Arg Gln Cys Gln Cys
 35 40 45
 Thr Ser Val Gly Ala Gln Asn Thr Val Ile Cys Ser Lys Leu Ala Ala
 50 55 60
 Lys Cys Leu Val Met Lys Ala Glu Met Asn Gly Ser Lys Leu Gly Arg
 65 70 75 80
 Arg Ala Lys Pro Glu Gly Ala Leu Gln Asn Asn Asp Gly Leu Tyr Asp
 85 90 95

Pro Asp Cys Asp Glu Ser Gly Leu Phe Lys Ala Lys Gln Cys Asn Gly
 100 105 110
 Thr Ser Thr Cys Trp Cys Val Asn Thr Ala Gly Val Arg Arg Thr Asp
 115 120 125
 Lys Asp Thr Glu Ile Thr Cys Ser Glu Arg Val Arg Thr Tyr Trp Ile
 130 135 140
 Ile Ile Glu Leu Lys His Lys Ala Arg Glu Lys Pro Tyr Asp Ser Lys
 145 150 155 160
 Ser Leu Arg Thr Ala Leu Gln Lys Glu Ile Thr Thr Arg Tyr Gln Leu
 165 170 175
 Asp Pro Lys Phe Ile Thr Ser Ile Leu Tyr Glu Asn Asn Val Ile Thr
 180 185 190
 Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val Asp
 195 200 205
 Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser
 210 215 220
 Leu Phe His Ser Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln Leu
 225 230 235 240
 Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala
 245 250 255
 Pro Glu Phe Ser Met Gln Gly Leu Lys Ala Gly Val Ile Ala Val Ile
 260 265 270
 Val Val Val Val Met Ala Val Val Ala Gly Ile Val Val Leu Val Ile
 275 280 285
 Ser Arg Lys Lys Arg Met Ala Lys Tyr Glu Lys Ala Glu Ile Lys Glu
 290 295 300
 Met Gly Glu Met His Arg Glu Leu Asn Ala
 305 310

<210> 3
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 <212> PRT
 <213> Homo sapiens

<220>
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<222> (1)..(882)

<223> E-Cadherin, Swissprot Accession P12830

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Met Gly Pro Trp Ser Arg Ser Leu Ser Ala Leu Leu Leu Leu Leu Gln
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Val Ser Ser Trp Leu Cys Gln Glu Pro Glu Pro Cys His Pro Gly Phe
20 25 30

Asp Ala Glu Ser Tyr Thr Phe Thr Val Pro Arg Arg His Leu Glu Arg
35 40 45

Gly Arg Val Leu Gly Arg Val Asn Phe Glu Asp Cys Thr Gly Arg Gln
50 55 60

Arg Thr Ala Tyr Phe Ser Leu Asp Thr Arg Phe Lys Val Gly Thr Asp
65 70 75 80

Gly Val Ile Thr Val Lys Arg Pro Leu Arg Phe His Asn Pro Gln Ile
85 90 95

His Phe Leu Val Tyr Ala Trp Asp Ser Thr Tyr Arg Lys Phe Ser Thr
100 105 110

Lys Val Thr Leu Asn Thr Val Gly His His His Arg Pro Pro Pro His
115 120 125

Gln Ala Ser Val Ser Gly Ile Gln Ala Glu Leu Leu Thr Phe Pro Asn
130 135 140

Ser Ser Pro Gly Leu Arg Arg Gln Lys Arg Asp Trp Val Ile Pro Pro
145 150 155 160

Ile Ser Cys Pro Glu Asn Glu Lys Gly Pro Phe Pro Lys Asn Leu Val
165 170 175

Gln Ile Lys Ser Asn Lys Asp Lys Glu Gly Lys Val Phe Tyr Ser Ile
180 185 190

Thr Gly Gln Gly Ala Asp Thr Pro Pro Val Gly Val Phe Ile Ile Glu
195 200 205

Arg Glu Thr Gly Trp Leu Lys Val Thr Glu Pro Leu Asp Arg Glu Arg
210 215 220

Ile Ala Thr Tyr Thr Leu Phe Ser His Ala Val Ser Ser Asn Gly Asn
225 230 235 240

Ala Val Glu Asp Pro₂₄₅ Met Glu Ile Leu Ile₂₅₀ Thr Val Thr Asp Gln₂₅₅ Asn
 Asp Asn Lys Pro₂₆₀ Glu Phe Thr Gln Glu₂₆₅ Val Phe Lys Gly Ser₂₇₀ Val Met
 Glu Gly Ala₂₇₅ Leu Pro Gly Thr Ser₂₈₀ Val Met Glu Val Thr₂₈₅ Ala Thr Asp
 Ala Asp₂₉₀ Asp Asp Val Asn Thr₂₉₅ Tyr Asn Ala Ala Ile₃₀₀ Ala Tyr Thr Ile
 Leu₃₀₅ Ser Gln Asp Pro Glu₃₁₀ Leu Pro Asp Lys Asn₃₁₅ Met Phe Thr Ile Asn₃₂₀
 Arg Asn Thr Gly Val₃₂₅ Ile Ser Val Val Thr₃₃₀ Thr Gly Leu Asp Arg₃₃₅ Glu
 Ser Phe Pro Thr₃₄₀ Tyr Thr Leu Val Val₃₄₅ Gln Ala Ala Asp Leu₃₅₀ Gln Gly
 Glu Gly Leu₃₅₅ Ser Thr Thr Ala Thr₃₆₀ Ala Val Ile Thr Val₃₆₅ Thr Asp Thr
 Asn Asp₃₇₀ Asn Pro Pro Ile Phe₃₇₅ Asn Pro Thr Thr Tyr₃₈₀ Lys Gly Gln Val
 Pro₃₈₅ Glu Asn Glu Ala Asn₃₉₀ Val Val Ile Thr Thr₃₉₅ Leu Lys Val Thr Asp₄₀₀
 Ala Asp Ala Pro₄₀₅ Asn Thr Pro Ala Trp Glu₄₁₀ Ala Val Tyr Thr Ile₄₁₅ Leu
 Asn Asp Asp Gly₄₂₀ Gly Gln Phe Val Val₄₂₅ Thr Thr Asn Pro Val₄₃₀ Asn Asn
 Asp Gly Ile₄₃₅ Leu Lys Thr Ala Lys₄₄₀ Gly Leu Asp Phe Glu₄₄₅ Ala Lys Gln
 Gln Tyr₄₅₀ Ile Leu His Val Ala₄₅₅ Val Thr Asn Val Val₄₆₀ Pro Phe Glu Val
 Ser₄₆₅ Leu Thr Thr Ser Thr₄₇₀ Ala Thr Val Thr Val₄₇₅ Asp Val Leu Asp Val₄₈₀
 Asn Glu Ala Pro Ile₄₈₅ Phe Val Pro Pro Glu₄₉₀ Lys Arg Val Glu Val₄₉₅ Ser

Glu Asp Phe Gly Val Gly Gln Glu Ile Thr Ser Tyr Thr Ala Gln Glu
 500 505 510
 Pro Asp Thr Phe Met Glu Gln Lys Ile Thr Tyr Arg Ile Trp Arg Asp
 515 520 525
 Thr Ala Asn Trp Leu Glu Ile Asn Pro Asp Thr Gly Ala Ile Ser Thr
 530 535 540
 Arg Ala Glu Leu Asp Arg Glu Asp Phe Glu His Val Lys Asn Ser Thr
 545 550 555 560
 Tyr Thr Ala Leu Ile Ile Ala Thr Asp Asn Gly Ser Pro Val Ala Thr
 565 570 575
 Gly Thr Gly Thr Leu Leu Leu Ile Leu Ser Asp Val Asn Asp Asn Ala
 580 585 590
 Pro Ile Pro Glu Pro Arg Thr Ile Phe Phe Cys Glu Arg Asn Pro Lys
 595 600 605
 Pro Gln Val Ile Asn Ile Ile Asp Ala Asp Leu Pro Pro Asn Thr Ser
 610 615 620
 Pro Phe Thr Ala Glu Leu Thr His Gly Ala Ser Ala Asn Trp Thr Ile
 625 630 635 640
 Gln Tyr Asn Asp Pro Thr Gln Glu Ser Ile Ile Leu Lys Pro Lys Met
 645 650 655
 Ala Leu Glu Val Gly Asp Tyr Lys Ile Asn Leu Lys Leu Met Asp Asn
 660 665 670
 Gln Asn Lys Asp Gln Val Thr Thr Leu Glu Val Ser Val Cys Asp Cys
 675 680 685
 Glu Gly Ala Ala Gly Val Cys Arg Lys Ala Gln Pro Val Glu Ala Gly
 690 695 700
 Leu Gln Ile Pro Ala Ile Leu Gly Ile Leu Gly Gly Ile Leu Ala Leu
 705 710 715 720
 Leu Ile Leu Ile Leu Leu Leu Leu Phe Leu Arg Arg Arg Ala Val
 725 730 735
 Val Lys Glu Pro Leu Leu Pro Pro Glu Asp Asp Thr Arg Asp Asn Val
 740 745 750

Tyr Tyr Tyr Asp Glu Glu Gly Gly Gly Glu Glu Asp Gln Asp Phe Asp
755 760 765

Leu Ser Gln Leu His Arg Gly Leu Asp Ala Arg Pro Glu Val Thr Arg
770 775 780

Asn Asp Val Ala Pro Thr Leu Met Ser Val Pro Arg Tyr Leu Pro Arg
785 790 795 800

Pro Ala Asn Pro Asp Glu Ile Gly Asn Phe Ile Asp Glu Asn Leu Lys
805 810 815

Ala Ala Asp Thr Asp Pro Thr Ala Pro Pro Tyr Asp Ser Leu Leu Val
820 825 830

Phe Asp Tyr Glu Gly Ser Gly Ser Glu Ala Ala Ser Leu Ser Ser Leu
835 840 845

Asn Ser Ser Glu Ser Asp Lys Asp Gln Asp Tyr Asp Tyr Leu Asn Glu
850 855 860

Trp Gly Asn Arg Phe Lys Lys Leu Ala Asp Met Tyr Gly Gly Gly Glu
865 870 875 880

Asp Asp

<210> 4
<211> 906
<212> PRT
<213> Homo sapiens

<220>
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<222> (1)..(906)
<223> Alpha-1 Catenin, Swissprot Accession P35221

<400> 4

Met Thr Ala Val His Ala Gly Asn Ile Asn Phe Lys Trp Asp Pro Lys
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Ser Leu Glu Ile Arg Thr Leu Ala Val Glu Arg Leu Leu Glu Pro Leu
20 25 30

Val Thr Gln Val Thr Thr Leu Val Asn Thr Asn Ser Lys Gly Pro Ser
35 40 45

Asn Lys Lys Arg Gly Arg Ser Lys Lys Ala His Val Leu Ala Ala Ser
50 55 60

Val Glu Gln Ala Thr Glu Asn Phe Leu Glu Lys Gly Asp Lys Ile Ala
65 70 75 80

Lys Glu Ser Gln Phe Leu Lys Glu Glu Leu Val Ala Ala Val Glu Asp
85 90 95

Val Arg Lys Gln Gly Asp Leu Met Lys Ala Ala Ala Gly Glu Phe Ala
100 105 110

Asp Asp Pro Cys Ser Ser Val Lys Arg Gly Asn Met Val Arg Ala Ala
115 120 125

Arg Ala Leu Leu Ser Ala Val Thr Arg Leu Leu Ile Leu Ala Asp Met
130 135 140

Ala Asp Val Tyr Lys Leu Leu Val Gln Leu Lys Val Val Glu Asp Gly
145 150 155 160

Ile Leu Lys Leu Arg Asn Ala Gly Asn Glu Gln Asp Leu Gly Ile Gln
165 170 175

Tyr Lys Ala Leu Lys Pro Glu Val Asp Lys Leu Asn Ile Met Ala Ala
180 185 190

Lys Arg Gln Gln Glu Leu Lys Asp Val Gly His Arg Asp Gln Met Ala
195 200 205

Ala Ala Arg Gly Ile Leu Gln Lys Asn Val Pro Ile Leu Tyr Thr Ala
210 215 220

Ser Gln Ala Cys Leu Gln His Pro Asp Val Ala Ala Tyr Lys Ala Asn
225 230 235 240

Arg Asp Leu Ile Tyr Lys Gln Leu Gln Gln Ala Val Thr Gly Ile Ser
245 250 255

Asn Ala Ala Gln Ala Thr Ala Ser Asp Asp Ala Ser Gln His Gln Gly
260 265 270

Gly Gly Gly Gly Glu Leu Ala Tyr Ala Leu Asn Asn Phe Asp Lys Gln
275 280 285

Ile Ile Val Asp Pro Leu Ser Phe Ser Glu Glu Arg Phe Arg Pro Ser
290 295 300

Leu Glu Glu Arg Leu Glu Ser Ile Ile Ser Gly Ala Ala Leu Met Ala
305 310 315 320

Asp Ser Ser Cys Thr Arg Asp Asp Arg Arg Glu Arg Ile Val Ala Glu
 325 330 335
 Cys Asn Ala Val Arg Gln Ala Leu Gln Asp Leu Leu Ser Glu Tyr Met
 340 345 350
 Gly Asn Ala Gly Arg Lys Glu Arg Ser Asp Ala Leu Asn Ser Ala Ile
 355 360 365
 Asp Lys Met Thr Lys Lys Thr Arg Asp Leu Arg Arg Gln Leu Arg Lys
 370 375 380
 Ala Val Met Asp His Val Ser Asp Ser Phe Leu Glu Thr Asn Val Pro
 385 390 395 400
 Leu Leu Val Leu Ile Glu Ala Ala Lys Asn Gly Asn Glu Lys Glu Val
 405 410 415
 Lys Glu Tyr Ala Gln Val Phe Arg Glu His Ala Asn Lys Leu Ile Glu
 420 425 430
 Val Ala Asn Leu Ala Cys Ser Ile Ser Asn Asn Glu Glu Gly Val Lys
 435 440 445
 Leu Val Arg Met Ser Ala Ser Gln Leu Glu Ala Leu Cys Pro Gln Val
 450 455 460
 Ile Asn Ala Ala Leu Ala Leu Ala Ala Lys Pro Gln Ser Lys Leu Ala
 465 470 475 480
 Gln Glu Asn Met Asp Leu Phe Lys Glu Gln Trp Glu Lys Gln Val Arg
 485 490 495
 Val Leu Thr Asp Ala Val Asp Asp Ile Thr Ser Ile Asp Asp Phe Leu
 500 505 510
 Ala Val Ser Glu Asn His Ile Leu Glu Asp Val Asn Lys Cys Val Ile
 515 520 525
 Ala Leu Gln Glu Lys Asp Val Asp Gly Leu Asp Arg Thr Ala Gly Ala
 530 535 540
 Ile Arg Gly Arg Ala Ala Arg Val Ile His Val Val Thr Ser Glu Met
 545 550 555 560
 Asp Asn Tyr Glu Pro Gly Val Tyr Thr Glu Lys Val Leu Glu Ala Thr
 565 570 575

Lys Leu Leu Ser Asn Thr Val Met Pro Arg Phe Thr Glu Gln Val Glu
580 585 590

Ala Ala Val Glu Ala Leu Ser Ser Asp Pro Ala Gln Pro Met Asp Glu
595 600 605

Asn Glu Phe Ile Asp Ala Ser Arg Leu Val Tyr Asp Gly Ile Arg Asp
610 615 620

Ile Arg Lys Ala Val Leu Met Ile Arg Thr Pro Glu Glu Leu Asp Asp
625 630 635 640

Ser Asp Phe Glu Thr Glu Asp Phe Asp Val Arg Ser Arg Thr Ser Val
645 650 655

Gln Thr Glu Asp Asp Gln Leu Ile Ala Gly Gln Ser Ala Arg Ala Ile
660 665 670

Met Ala Gln Leu Pro Gln Glu Gln Lys Ala Lys Ile Ala Glu Gln Val
675 680 685

Ala Ser Phe Gln Glu Glu Lys Ser Lys Leu Asp Ala Glu Val Ser Lys
690 695 700

Trp Asp Asp Ser Gly Asn Asp Ile Ile Val Leu Ala Lys Gln Met Cys
705 710 715 720

Met Ile Met Met Glu Met Thr Asp Phe Thr Arg Gly Lys Gly Pro Leu
725 730 735

Lys Asn Thr Ser Asp Val Ile Ser Ala Ala Lys Lys Ile Ala Glu Ala
740 745 750

Gly Ser Arg Met Asp Lys Leu Gly Arg Thr Ile Ala Asp His Cys Pro
755 760 765

Asp Ser Ala Cys Lys Gln Asp Leu Leu Ala Tyr Leu Gln Arg Ile Ala
770 775 780

Leu Tyr Cys His Gln Leu Asn Ile Cys Ser Lys Val Lys Ala Glu Val
785 790 795 800

Gln Asn Leu Gly Gly Glu Leu Val Val Ser Gly Val Asp Ser Ala Met
805 810 815

Ser Leu Ile Gln Ala Ala Lys Asn Leu Met Asn Ala Val Val Gln Thr
820 825 830

Val Lys Ala Ser Tyr Val Ala Ser Thr Lys Tyr Gln Lys Ser Gln Gly
835 840 845

Met Ala Ser Leu Asn Leu Pro Ala Val Ser Trp Lys Met Lys Ala Pro
850 855 860

Glu Lys Lys Pro Leu Val Lys Arg Glu Lys Gln Asp Glu Thr Gln Thr
865 870 875 880

Lys Ile Lys Arg Ala Ser Gln Lys Lys His Val Asn Pro Val Gln Ala
885 890 895

Leu Ser Glu Phe Lys Ala Met Asp Ser Ile
900 905

<210> 5
<211> 953
<212> PRT
<213> Homo sapiens

<220>
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<222> (1)..(953)
<223> Alpha-2 Catenin, Swissprot Accession P26232

<400> 5

Met Thr Ser Ala Thr Ser Pro Ile Ile Leu Lys Trp Asp Pro Lys Ser
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Leu Glu Ile Arg Thr Leu Thr Val Glu Arg Leu Leu Glu Pro Leu Val
20 25 30

Thr Gln Val Thr Thr Leu Val Asn Thr Ser Asn Lys Gly Pro Ser Gly
35 40 45

Lys Lys Lys Gly Arg Ser Lys Lys Ala His Val Leu Ala Ala Ser Val
50 55 60

Glu Gln Ala Thr Gln Asn Phe Leu Glu Lys Gly Glu Gln Ile Ala Lys
65 70 75 80

Glu Ser Gln Asp Leu Lys Glu Glu Leu Val Ala Ala Val Glu Asp Val
85 90 95

Arg Lys Gln Gly Glu Thr Met Arg Ile Ala Ser Ser Glu Phe Ala Asp
100 105 110

Asp Pro Cys Ser Ser Val Lys Arg Gly Thr Met Val Arg Ala Ala Arg
Page 13

115

120

125

Ala Leu Leu Ser Ala Val Thr Arg Leu Leu Ile Leu Ala Asp Met Ala
130 135 140

Asp Val Met Arg Leu Leu Ser His Leu Lys Ile Val Glu Glu Ala Leu
145 150 155 160

Glu Ala Val Lys Asn Ala Thr Asn Glu Gln Asp Leu Ala Asn Arg Phe
165 170 175

Lys Glu Phe Gly Lys Lys Met Val Lys Leu Asn Tyr Val Ala Ala Arg
180 185 190

Arg Gln Gln Glu Leu Lys Asp Pro His Cys Arg Asp Glu Met Ala Ala
195 200 205

Ala Arg Gly Ala Leu Lys Lys Asn Ala Thr Met Leu Tyr Thr Ala Ser
210 215 220

Gln Ala Phe Leu Arg His Pro Asp Val Ala Ala Thr Arg Ala Asn Arg
225 230 235 240

Asp Tyr Val Phe Lys Gln Val Gln Glu Ala Ile Ala Gly Ile Ser Asn
245 250 255

Ala Ala Gln Ala Thr Ser Pro Thr Asp Glu Ala Lys Gly His Thr Gly
260 265 270

Ile Gly Glu Leu Ala Ala Ala Leu Asn Glu Phe Asp Asn Lys Ile Ile
275 280 285

Leu Asp Pro Met Thr Phe Ser Glu Ala Arg Phe Arg Pro Ser Leu Glu
290 295 300

Glu Arg Leu Glu Ser Ile Ile Ser Gly Ala Ala Leu Met Ala Asp Ser
305 310 315 320

Ser Cys Thr Arg Asp Asp Arg Arg Glu Arg Ile Val Ala Glu Cys Asn
325 330 335

Ala Val Arg Gln Ala Leu Gln Asp Leu Leu Ser Glu Tyr Met Asn Asn
340 345 350

Thr Gly Arg Lys Glu Lys Gly Asp Pro Leu Asn Ile Ala Ile Asp Lys
355 360 365

Met Thr Lys Lys Thr Arg Asp Leu Arg Arg Gln Leu Arg Lys Ala Val
Page 14

370

375

380

Met Asp His Ile Ser Asp Ser Phe Leu Glu Thr Asn Val Pro Leu Leu
385 390 395 400

Val Leu Ile Glu Ala Ala Lys Ser Gly Asn Glu Lys Glu Val Lys Glu
405 410 415

Tyr Ala Gln Val Phe Arg Glu His Ala Asn Lys Leu Val Glu Val Ala
420 425 430

Asn Leu Ala Cys Ser Ile Ser Asn Asn Glu Glu Gly Val Lys Leu Val
435 440 445

Arg Met Ala Ala Thr Gln Ile Asp Ser Leu Cys Pro Gln Val Ile Asn
450 455 460

Ala Ala Leu Thr Leu Ala Ala Arg Pro Gln Ser Lys Val Ala Gln Asp
465 470 475 480

Asn Met Asp Val Phe Lys Asp Gln Trp Glu Lys Gln Val Arg Val Leu
485 490 495

Thr Glu Ala Val Asp Asp Ile Thr Ser Val Asp Asp Phe Leu Ser Val
500 505 510

Ser Glu Asn His Ile Leu Glu Asp Val Asn Lys Cys Val Ile Ala Leu
515 520 525

Gln Glu Gly Asp Val Asp Thr Leu Asp Arg Thr Ala Gly Ala Ile Arg
530 535 540

Gly Arg Ala Ala Arg Val Ile His Ile Ile Asn Ala Glu Met Glu Asn
545 550 555 560

Tyr Glu Ala Gly Val Tyr Thr Glu Lys Val Leu Glu Ala Thr Lys Leu
565 570 575

Leu Ser Glu Thr Val Met Pro Arg Phe Ala Glu Gln Val Glu Val Ala
580 585 590

Ile Glu Ala Leu Ser Ala Asn Val Pro Gln Pro Phe Glu Glu Asn Glu
595 600 605

Phe Ile Asp Ala Ser Arg Leu Val Tyr Asp Gly Val Arg Asp Ile Arg
610 615 620

Lys Ala Val Leu Met Ile Arg Thr Pro Glu Glu Leu Glu Asp Asp Ser
Page 15

625	630	635	640
Asp Phe Glu Gln Glu 645 Asp Tyr Asp Val Arg 650 Arg Gly Thr Ser Val 655 Gln			
Thr Glu Asp Asp 660 Gln Leu Ile Ala Gly 665 Gln Ser Ala Arg Ala 670 Ile Met			
Ala Gln Leu 675 Pro Gln Glu Glu Lys 680 Ala Lys Ile Ala Glu 685 Gln Val Glu			
Ile Phe 690 His Gln Glu Lys Ser 695 Lys Leu Asp Ala Glu 700 Val Ala Lys Trp			
Asp 705 Asp Ser Gly Asn Asp 710 Ile Ile Val Leu Ala 715 Lys Gln Met Cys Met 720			
Ile Met Met Glu 725 Met Thr Asp Phe Thr Arg 730 Gly Lys Gly Pro Leu 735 Lys			
Asn Thr Ser Asp 740 Val Ile Asn Ala Ala 745 Lys Lys Ile Ala Glu 750 Ala Gly			
Ser Arg 755 Met Asp Lys Leu Ala Arg 760 Ala Val Ala Asp Glu 765 Cys Pro Asp			
Ser Ala 770 Cys Lys Gln Asp Leu 775 Leu Ala Tyr Leu Gln 780 Arg Ile Ala Leu			
Tyr 785 Cys His Gln Leu Asn 790 Ile Cys Ser Lys Val 795 Lys Ala Glu Val Gln 800			
Asn Leu Gly Gly Glu 805 Leu Ile Val Ser Gly 810 Thr Gly Val Gln 815 Ser Thr			
Phe Thr Thr Phe 820 Tyr Glu Val Asp Cys 825 Asp Val Ile Asp Gly 830 Gly Arg			
Ala Ser Gln 835 Leu Ser Thr His Leu 840 Pro Thr Cys Ala Glu 845 Gly Ala Pro			
Ile Gly 850 Ser Gly Ser Ser Asp 855 Ser Ser Met Leu Asp 860 Ser Ala Thr Ser			
Leu 865 Ile Gln Ala Ala Lys 870 Asn Leu Met Asn Ala 875 Val Val Leu Thr Val 880			
Lys Ala Ser Tyr Val Ala Ser Thr Lys Tyr Gln Lys Val Tyr Gly Thr			

885 890 895
 Ala Ala Val Asn Ser Pro Val Val Ser Trp Lys Met Lys Ala Pro Glu
 900 905 910
 Lys Lys Pro Leu Val Lys Arg Glu Lys Pro Glu Glu Phe Gln Thr Arg
 915 920 925
 Val Arg Arg Gly Ser Gln Lys Lys His Ile Ser Pro Val Gln Ala Leu
 930 935 940
 Ser Glu Phe Lys Ala Met Asp Ser Phe
 945 950

 <210> 6
 <211> 781
 <212> PRT
 <213> Homo sapiens

 <220>
 <221> misc_feature
 <222> (1)..(781)
 <223> beta-Catenin, Swissprot Accession P35222

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 20 25 30
 Ser Gly Ile His Ser Gly Ala Thr Thr Thr Ala Pro Ser Leu Ser Gly
 35 40 45
 Lys Gly Asn Pro Glu Glu Glu Asp Val Asp Thr Ser Gln Val Leu Tyr
 50 55 60
 Glu Trp Glu Gln Gly Phe Ser Gln Ser Phe Thr Gln Glu Gln Val Ala
 65 70 75 80
 Asp Ile Asp Gly Gln Tyr Ala Met Thr Arg Ala Gln Arg Val Arg Ala
 85 90 95
 Ala Met Phe Pro Glu Thr Leu Asp Glu Gly Met Gln Ile Pro Ser Thr
 100 105 110
 Gln Phe Asp Ala Ala His Pro Thr Asn Val Gln Arg Leu Ala Glu Pro
 115 120 125

Ser Gln Met Leu Lys His Ala Val Val Asn Leu Ile Asn Tyr Gln Asp
 130 135 140
 Asp Ala Glu Leu Ala Thr Arg Ala Ile Pro Glu Leu Thr Lys Leu Leu
 145 150 155 160
 Asn Asp Glu Asp Gln Val Val Val Asn Lys Ala Ala Val Met Val His
 165 170 175
 Gln Leu Ser Lys Lys Glu Ala Ser Arg His Ala Ile Met Arg Ser Pro
 180 185 190
 Gln Met Val Ser Ala Ile Val Arg Thr Met Gln Asn Thr Asn Asp Val
 195 200 205
 Glu Thr Ala Arg Cys Thr Ala Gly Thr Leu His Asn Leu Ser His His
 210 215 220
 Arg Glu Gly Leu Leu Ala Ile Phe Lys Ser Gly Gly Ile Pro Ala Leu
 225 230 235 240
 Val Lys Met Leu Gly Ser Pro Val Asp Ser Val Leu Phe Tyr Ala Ile
 245 250 255
 Thr Thr Leu His Asn Leu Leu Leu His Gln Glu Gly Ala Lys Met Ala
 260 265 270
 Val Arg Leu Ala Gly Gly Leu Gln Lys Met Val Ala Leu Leu Asn Lys
 275 280 285
 Thr Asn Val Lys Phe Leu Ala Ile Thr Thr Asp Cys Leu Gln Ile Leu
 290 295 300
 Ala Tyr Gly Asn Gln Glu Ser Lys Leu Ile Ile Leu Ala Ser Gly Gly
 305 310 315 320
 Pro Gln Ala Leu Val Asn Ile Met Arg Thr Tyr Thr Tyr Glu Lys Leu
 325 330 335
 Leu Trp Thr Thr Ser Arg Val Leu Lys Val Leu Ser Val Cys Ser Ser
 340 345 350
 Asn Lys Pro Ala Ile Val Glu Ala Gly Gly Met Gln Ala Leu Gly Leu
 355 360 365
 His Leu Thr Asp Pro Ser Gln Arg Leu Val Gln Asn Cys Leu Trp Thr
 370 375 380

Leu Arg Asn Leu Ser Asp Ala Ala Thr Lys Gln Glu Gly Met Glu Gly
 385 390 395 400
 Leu Leu Gly Thr Leu Val Gln Leu Leu Gly Ser Asp Asp Ile Asn Val
 405 410 415
 Val Thr Cys Ala Ala Gly Ile Leu Ser Asn Leu Thr Cys Asn Asn Tyr
 420 425 430
 Lys Asn Lys Met Met Val Cys Gln Val Gly Gly Ile Glu Ala Leu Val
 435 440 445
 Arg Thr Val Leu Arg Ala Gly Asp Arg Glu Asp Ile Thr Glu Pro Ala
 450 455 460
 Ile Cys Ala Leu Arg His Leu Thr Ser Arg His Gln Glu Ala Glu Met
 465 470 475 480
 Ala Gln Asn Ala Val Arg Leu His Tyr Gly Leu Pro Val Val Val Lys
 485 490 495
 Leu Leu His Pro Pro Ser His Trp Pro Leu Ile Lys Ala Thr Val Gly
 500 505 510
 Leu Ile Arg Asn Leu Ala Leu Cys Pro Ala Asn His Ala Pro Leu Arg
 515 520 525
 Glu Gln Gly Ala Ile Pro Arg Leu Val Gln Leu Leu Val Arg Ala His
 530 535 540
 Gln Asp Thr Gln Arg Arg Thr Ser Met Gly Gly Thr Gln Gln Gln Phe
 545 550 555 560
 Val Glu Gly Val Arg Met Glu Glu Ile Val Glu Gly Cys Thr Gly Ala
 565 570 575
 Leu His Ile Leu Ala Arg Asp Val His Asn Arg Ile Val Ile Arg Gly
 580 585 590
 Leu Asn Thr Ile Pro Leu Phe Val Gln Leu Leu Tyr Ser Pro Ile Glu
 595 600 605
 Asn Ile Gln Arg Val Ala Ala Gly Val Leu Cys Glu Leu Ala Gln Asp
 610 615 620
 Lys Glu Ala Ala Glu Ala Ile Glu Ala Glu Gly Ala Thr Ala Pro Leu
 625 630 635 640

Thr Glu Leu Leu His Ser Arg Asn Glu Gly Val Ala Thr Tyr Ala Ala
 645 650 655
 Ala Val Leu Phe Arg Met Ser Glu Asp Lys Pro Gln Asp Tyr Lys Lys
 660 665 670
 Arg Leu Ser Val Glu Leu Thr Ser Ser Leu Phe Arg Thr Glu Pro Met
 675 680 685
 Ala Trp Asn Glu Thr Ala Asp Leu Gly Leu Asp Ile Gly Ala Gln Gly
 690 695 700
 Glu Pro Leu Gly Tyr Arg Gln Asp Asp Pro Ser Tyr Arg Ser Phe His
 705 710 715 720
 Ser Gly Gly Tyr Gly Gln Asp Ala Leu Gly Met Asp Pro Met Met Glu
 725 730 735
 His Glu Met Gly Gly His His Pro Gly Ala Asp Tyr Pro Val Asp Gly
 740 745 750
 Leu Pro Asp Leu Gly His Ala Gln Asp Leu Met Asp Gly Leu Pro Pro
 755 760 765
 Gly Asp Ser Asn Gln Leu Ala Trp Phe Asp Thr Asp Leu
 770 775 780

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 <211> 585
 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)..(585)
 <223> Involucrin, Swissprot Accession P07476

<400> 7

Met Ser Gln Gln His Thr Leu Pro Val Thr Leu Ser Pro Ala Leu Ser
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 Gln Glu Leu Leu Lys Thr Val Pro Pro Pro Val Asn Thr His Gln Glu
 20 25 30
 Gln Met Lys Gln Pro Thr Pro Leu Pro Pro Pro Cys Gln Lys Val Pro
 35 40 45
 Val Glu Leu Pro Val Glu Val Pro Ser Lys Gln Glu Glu Lys His Met
 50 55 60

Thr Ala Val Lys Gly Leu Pro Glu Gln Glu Cys Glu Gln Gln Gln Lys
 65 70 75 80
 Glu Pro Gln Glu Gln Glu Leu Gln Gln Gln His Trp Glu Gln His Glu
 85 90 95
 Glu Tyr Gln Lys Ala Glu Asn Pro Glu Gln Gln Leu Lys Gln Glu Lys
 100 105 110
 Thr Gln Arg Asp Gln Gln Leu Asn Lys Gln Leu Glu Glu Glu Lys Lys
 115 120 125
 Leu Leu Asp Gln Gln Leu Asp Gln Glu Leu Val Lys Arg Asp Glu Gln
 130 135 140
 Leu Gly Met Lys Lys Glu Gln Leu Leu Glu Leu Pro Glu Gln Gln Glu
 145 150 155 160
 Gly His Leu Lys His Leu Glu Gln Gln Glu Gly Gln Leu Lys His Pro
 165 170 175
 Glu Gln Gln Glu Gly Gln Leu Glu Leu Pro Glu Gln Gln Glu Gly Gln
 180 185 190
 Leu Glu Leu Pro Glu Gln Gln Glu Gly Gln Leu Glu Leu Pro Glu Gln
 195 200 205
 Gln Glu Gly Gln Leu Glu Leu Pro Glu Gln Gln Glu Gly Gln Leu Glu
 210 215 220
 Leu Pro Gln Gln Gln Glu Gly Gln Leu Glu Leu Ser Glu Gln Gln Glu
 225 230 235 240
 Gly Gln Leu Glu Leu Ser Glu Gln Gln Glu Gly Gln Leu Glu Leu Ser
 245 250 255
 Glu Gln Gln Glu Gly Gln Leu Lys His Leu Glu His Gln Glu Gly Gln
 260 265 270
 Leu Glu Val Pro Glu Glu Gln Met Gly Gln Leu Lys Tyr Leu Glu Gln
 275 280 285
 Gln Glu Gly Gln Leu Lys His Leu Asp Gln Gln Glu Lys Gln Pro Glu
 290 295 300
 Leu Pro Glu Gln Gln Met Gly Gln Leu Lys His Leu Glu Gln Gln Glu
 305 310 315 320

Gly Gln Pro Lys His₃₂₅ Leu Glu Gln Gln Glu₃₃₀ Gly Gln Leu Glu Gln₃₃₅ Leu
 Glu Glu Gln Glu₃₄₀ Gly Gln Leu Lys His₃₄₅ Leu Glu Gln Gln Glu₃₅₀ Gly Gln
 Leu Glu His₃₅₅ Leu Glu His Gln Glu₃₆₀ Gly Gln Leu Gly Leu₃₆₅ Pro Glu Gln
 Gln Val₃₇₀ Leu Gln Leu Lys Gln₃₇₅ Leu Glu Lys Gln Gln₃₈₀ Gly Gln Pro Lys
 His₃₈₅ Leu Glu Glu Glu₃₉₀ Gly Gln Leu Lys His₃₉₅ Leu Val Gln Gln Glu₄₀₀
 Gly Gln Leu Lys His₄₀₅ Leu Val Gln Gln Glu₄₁₀ Gly Gln Leu Glu Gln₄₁₅ Gln
 Glu Arg Gln Val₄₂₀ Glu His Leu Glu Gln₄₂₅ Gln Val Gly Gln Leu Lys His
 Leu Glu Glu₄₃₅ Gln Glu Gly Gln Leu₄₄₀ Lys His Leu Glu Gln₄₄₅ Gln Gln Gly
 Gln Leu Glu Val Pro Glu Gln₄₅₅ Gln Val Gly Gln Pro₄₆₀ Lys Asn Leu Glu
 Gln Glu Glu Lys Gln Leu₄₇₀ Glu Leu Pro Glu Gln₄₇₅ Gln Glu Gly Gln Val₄₈₀
 Lys His Leu Glu Lys₄₈₅ Gln Glu Ala Gln Leu₄₉₀ Glu Leu Pro Glu Gln₄₉₅ Gln
 Val Gly Gln Pro₅₀₀ Lys His Leu Glu Gln₅₀₅ Gln Glu Lys His Leu₅₁₀ Glu His
 Pro Glu Gln₅₁₅ Gln Asp Gly Gln Leu₅₂₀ Lys His Leu Glu Gln₅₂₅ Gln Glu Gly
 Gln Leu Lys Asp Leu Glu Gln₅₃₅ Gln Lys Gly Gln Leu₅₄₀ Glu Gln Pro Val
 Phe₅₄₅ Ala Pro Ala Pro Gly₅₅₀ Gln Val Gln Asp Ile₅₅₅ Gln Pro Ala Leu₅₆₀ Pro
 Thr Lys Gly Glu Val₅₆₅ Leu Leu Pro Val Glu₅₇₀ His Gln Gln Gln Lys₅₇₅ Gln

Glu Val Gln Trp Pro Pro Lys His Lys
580 585

<210> 8
<211> 968
<212> PRT
<213> Homo sapiens

<220>
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<222> (1)..(968)
<223> p120, Swissprot Accession 060716

<400> 8

Met Asp Asp Ser Glu Val Glu Ser Thr Ala Ser Ile Leu Ala Ser Val
1 5 10 15

Lys Glu Gln Glu Ala Gln Phe Glu Lys Leu Thr Arg Ala Leu Glu Glu
20 25 30

Glu Arg Arg His Val Ser Ala Gln Leu Glu Arg Val Arg Val Ser Pro
35 40 45

Gln Asp Ala Asn Pro Leu Met Ala Asn Gly Thr Leu Thr Arg Arg His
50 55 60

Gln Asn Gly Arg Phe Val Gly Asp Ala Asp Leu Glu Arg Gln Lys Phe
65 70 75 80

Ser Asp Leu Lys Leu Asn Gly Pro Gln Asp His Ser His Leu Leu Tyr
85 90 95

Ser Thr Ile Pro Arg Met Gln Glu Pro Gly Gln Ile Val Glu Thr Tyr
100 105 110

Thr Glu Glu Asp Pro Glu Gly Ala Met Ser Val Val Ser Val Glu Thr
115 120 125

Ser Asp Asp Gly Thr Thr Arg Arg Thr Glu Thr Thr Val Lys Lys Val
130 135 140

Val Lys Thr Val Thr Thr Arg Thr Val Gln Pro Val Ala Met Gly Pro
145 150 155 160

Asp Gly Leu Pro Val Asp Ala Ser Ser Val Ser Asn Asn Tyr Ile Gln
165 170 175

Thr Leu Gly Arg Asp Phe Arg Lys Asn Gly Asn Gly Gly Pro Gly Pro
180 185 190

Tyr Val Gly Gln Ala Gly Thr Ala Thr Leu Pro Arg Asn Phe His Tyr
 195 200 205

Pro Pro Asp Gly Tyr Ser Arg His Tyr Glu Asp Gly Tyr Pro Gly Gly
 210 215 220

Ser Asp Asn Tyr Gly Ser Leu Ser Arg Val Thr Arg Ile Glu Glu Arg
 225 230 235 240

Tyr Arg Pro Ser Met Glu Gly Tyr Arg Ala Pro Ser Arg Gln Asp Val
 245 250 255

Tyr Gly Pro Gln Pro Gln Val Arg Val Gly Gly Ser Ser Val Asp Leu
 260 265 270

His Arg Phe His Pro Glu Pro Tyr Gly Leu Glu Asp Asp Gln Arg Ser
 275 280 285

Met Gly Tyr Asp Asp Leu Asp Tyr Gly Met Met Ser Asp Tyr Gly Thr
 290 295 300

Ala Arg Arg Thr Gly Thr Pro Ser Asp Pro Arg Arg Arg Leu Arg Ser
 305 310 315 320

Tyr Glu Asp Met Ile Gly Glu Glu Val Pro Ser Asp Gln Tyr Tyr Trp
 325 330 335

Ala Pro Leu Ala Gln His Glu Arg Gly Ser Leu Ala Ser Leu Asp Ser
 340 345 350

Leu Arg Lys Gly Gly Pro Pro Pro Asn Trp Arg Gln Pro Glu Leu
 355 360 365

Pro Glu Val Ile Ala Met Leu Gly Phe Arg Leu Asp Ala Val Lys Ser
 370 375 380

Asn Ala Ala Ala Tyr Leu Gln His Leu Cys Tyr Arg Asn Asp Lys Val
 385 390 395 400

Lys Thr Asp Val Arg Lys Leu Lys Gly Ile Pro Val Leu Val Gly Leu
 405 410 415

Leu Asp His Pro Lys Lys Glu Val His Leu Gly Ala Cys Gly Ala Leu
 420 425 430

Lys Asn Ile Ser Phe Gly Arg Asp Gln Asp Asn Lys Ile Ala Ile Lys
 435 440 445

Asn Cys Asp Gly Val Pro Ala Leu Val Arg Leu Leu Arg Lys Ala Arg
 450 455 460

Asp Met Asp Leu Thr Glu Val Ile Thr Gly Thr Leu Trp Asn Leu Ser
 465 470 475 480

Ser His Asp Ser Ile Lys Met Glu Ile Val Asp His Ala Leu His Ala
 485 490 495

Leu Thr Asp Glu Val Ile Ile Pro His Ser Gly Trp Glu Arg Glu Pro
 500 505 510

Asn Glu Asp Cys Lys Pro Arg His Ile Glu Trp Glu Ser Val Leu Thr
 515 520 525

Asn Thr Ala Gly Cys Leu Arg Asn Val Ser Ser Glu Arg Ser Glu Ala
 530 535 540

Arg Arg Lys Leu Arg Glu Cys Asp Gly Leu Val Asp Ala Leu Ile Phe
 545 550 555 560

Ile Val Gln Ala Glu Ile Gly Gln Lys Asp Ser Asp Ser Lys Leu Val
 565 570 575

Glu Asn Cys Val Cys Leu Leu Arg Asn Leu Ser Tyr Gln Val His Arg
 580 585 590

Glu Ile Pro Gln Ala Glu Arg Tyr Gln Glu Ala Ala Pro Asn Val Ala
 595 600 605

Asn Asn Thr Gly Pro His Ala Ala Ser Cys Phe Gly Ala Lys Lys Gly
 610 615 620

Lys Asp Glu Trp Phe Ser Arg Gly Lys Lys Pro Ile Glu Asp Pro Ala
 625 630 635 640

Asn Asp Thr Val Asp Phe Pro Lys Arg Thr Ser Pro Ala Arg Gly Tyr
 645 650 655

Glu Leu Leu Phe Gln Pro Glu Val Val Arg Ile Tyr Ile Ser Leu Leu
 660 665 670

Lys Glu Ser Lys Thr Pro Ala Ile Leu Glu Ala Ser Ala Gly Ala Ile
 675 680 685

Gln Asn Leu Cys Ala Gly Arg Trp Thr Tyr Gly Arg Tyr Ile Arg Ser
 690 695 700

Ala Leu Arg Gln Glu Lys Ala Leu Ser Ala Ile Ala Asp Leu Leu Thr
 705 710 715 720
 Asn Glu His Glu Arg Val Val Lys Ala Ala Ser Gly Ala Leu Arg Asn
 725 730 735
 Leu Ala Val Asp Ala Arg Asn Lys Glu Leu Ile Gly Lys His Ala Ile
 740 745 750
 Pro Asn Leu Val Lys Asn Leu Pro Gly Gly Gln Gln Asn Ser Ser Trp
 755 760 765
 Asn Phe Ser Glu Asp Thr Val Ile Ser Ile Leu Asn Thr Ile Asn Glu
 770 775 780
 Val Ile Ala Glu Asn Leu Glu Ala Ala Lys Lys Leu Arg Glu Thr Gln
 785 790 795 800
 Gly Ile Glu Lys Leu Val Leu Ile Asn Lys Ser Gly Asn Arg Ser Glu
 805 810 815
 Lys Glu Val Arg Ala Ala Ala Leu Val Leu Gln Thr Ile Trp Gly Tyr
 820 825 830
 Lys Glu Leu Arg Lys Pro Leu Glu Lys Glu Gly Trp Lys Lys Ser Asp
 835 840 845
 Phe Gln Val Asn Leu Asn Asn Ala Ser Arg Ser Gln Ser Ser His Ser
 850 855 860
 Tyr Asp Asp Ser Thr Leu Pro Leu Ile Asp Arg Asn Gln Lys Ser Asp
 865 870 875 880
 Lys Lys Pro Asp Arg Glu Glu Ile Gln Met Ser Asn Met Gly Ser Asn
 885 890 895
 Thr Lys Ser Leu Asp Asn Asn Tyr Ser Thr Pro Asn Glu Arg Gly Asp
 900 905 910
 His Asn Arg Thr Leu Asp Arg Ser Gly Asp Leu Gly Asp Met Glu Pro
 915 920 925
 Leu Lys Gly Thr Thr Pro Leu Met Gln Asp Glu Gly Gln Glu Ser Leu
 930 935 940
 Glu Glu Glu Leu Asp Val Leu Val Leu Asp Asp Glu Gly Gly Gln Val
 945 950 955 960

Ser Tyr Pro Ser Met Gln Lys Ile
965